
OSPF for Service Providers:
Migration from LDP to SR
Anton Elita
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JUNIPER NETWORKS
Driven by Experience

Segment Routing: Introduction

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Why segment routing

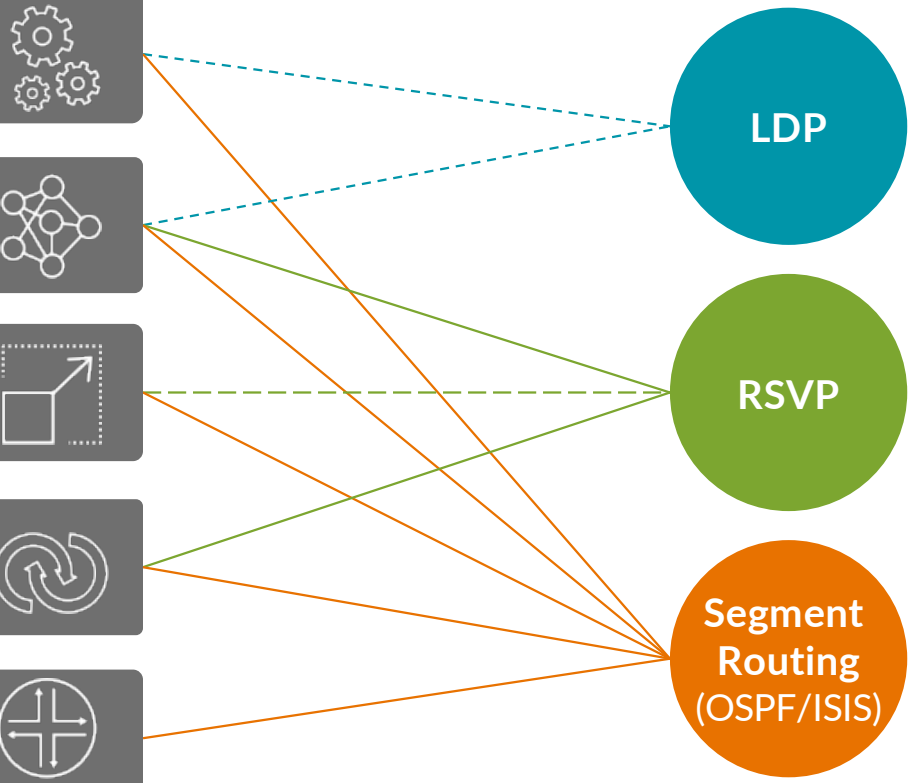
Operational simplicity
- Fewer protocol, stateless, programmable

High availability
- Reliable link/node/path protection with [TI-] LFA

Scalability and efficiency
- Support for 100x node scale with ECMP/TE

Seamless integration
- Seamless integration in MPLS forwarding plane

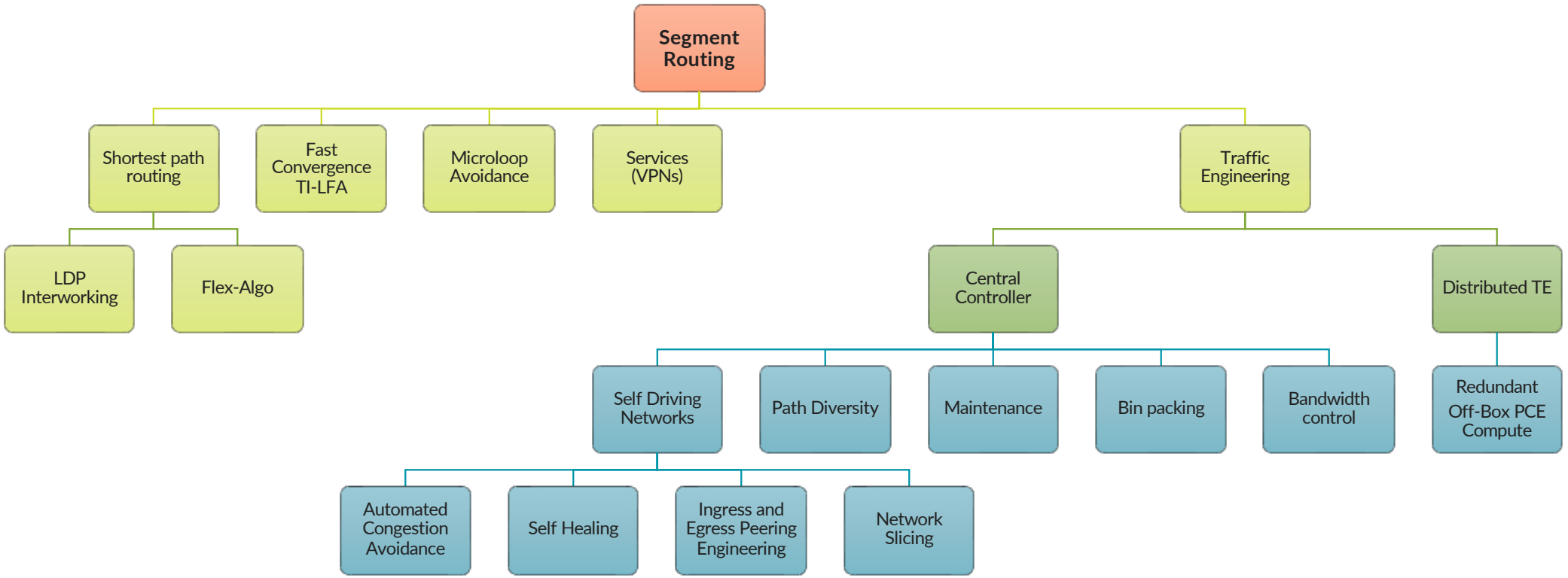
Application aware routing
- Centralized control to applications



SR Flavors

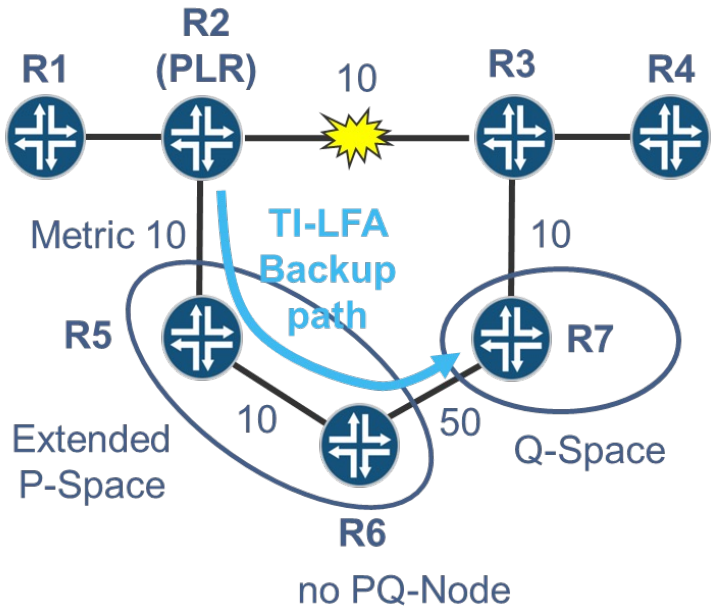
SR-MPLS	SR-MPLS over IPv6	SRv6	SRv6 with compressed header
• MPLS shim header • Mature standardization • Widely deployed • Small overhead • Wide silicon support	• Same as SR-MPLS, IPv6 control and data plane • Feature-wise full parity: H2 2023 (eODN, transport class, sBFD...)	• No shim header • Limited deployment • Large header overhead for TE • Limited silicon support on older generations	• Similar silicon support as SRv6 • Inter-op with SRv6 • Low overhead for TE • complex bit-shift operations in the header • C-SID is the way in IETF • IETF Comparison Draft for SRm6/CRH, VSID, UIDSR, µSID

Segment Routing Use Cases



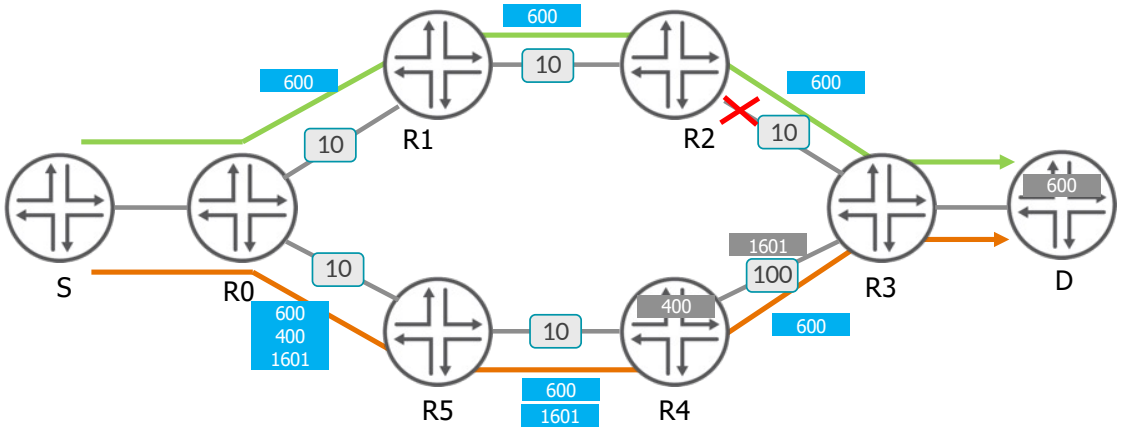
Topology-Independent LFA (TI-LFA) for IS-IS

- Improve backup coverage using SPRING
  - Example: P- and Q-space do not overlap, rLFA not available, adjacent P- and Q-node
  - TI-LFA backup path built by Node SIDs + Adjacency SIDs
- Protection against link failure, node failure, and failures of fate-sharing groups
- Backup path is post-convergence path
  - TI-LFA removes protected link/node to calculate backup path using standard SPF



Repair tunnel: Node SID label for R6 + Adj. SID label for R6-to-R7 link

Microloop Avoidance



Problem:

- Before the failure of link R2->R3:
- Shortest path from Source(S) to Destination(D) is S→R0→R1→R2→R3→D.
- After the failure of link R2->R3, micro-loops may occur if:
  - If R0 updates its forwarding state before R5, packets will loop between R0 and R5.
  - If both R0 and R5 have updated their forwarding states and R4 has not, packets will loop between R4→R5
- **Solution:**
- In the event of failure of R2-R3 link, R0 programs the microloop avoidance path towards R3 using Node SID of R4 and Adj-SID of R4-R3, for a configurable amount of time.

Flex Algorithm

Juniper Innovation

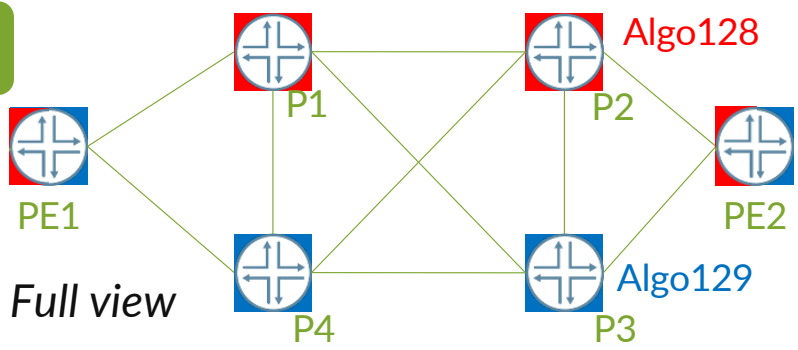
NETWORK SLICING LIGHT
Intent Based Network slicing with fewer than 8 slices

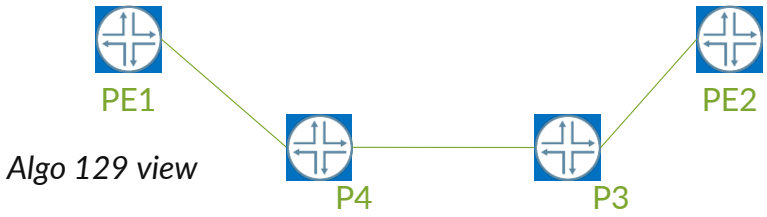
LATENCY SENSITIVE TRANSPORT
Dynamic delay-based monitoring with dedicated network

CONTROLLER OPTIONAL & SINGLE DOMAIN
Optimized for one domain with optional controller

LOW LABEL STACK DEPTH
Label stack with single label

TRUE PROTECION FOR EACH SLICE
TI-LFA Stays within the dedicated slice





Automation:

Overview

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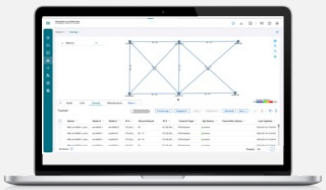
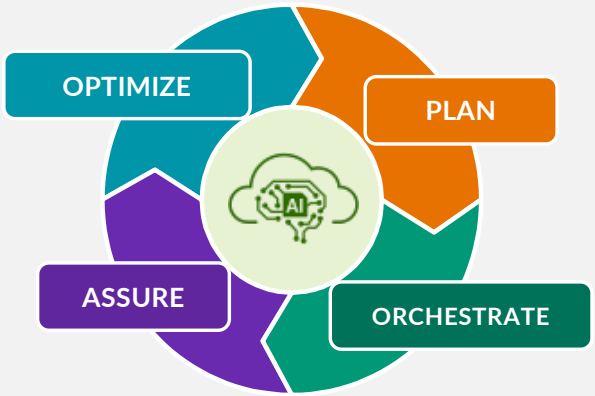
Paragon Automation

A better, faster, simpler way to achieve experience-first networking:

Intuitive user experience

- Simple user interface
- Use case based
- AI-enabled





State of the art intent-based networking

- Experience driven
- Cloud-native by design
- Open and API-driven
- Integrated end-to-end use cases
- Closed-loop automation

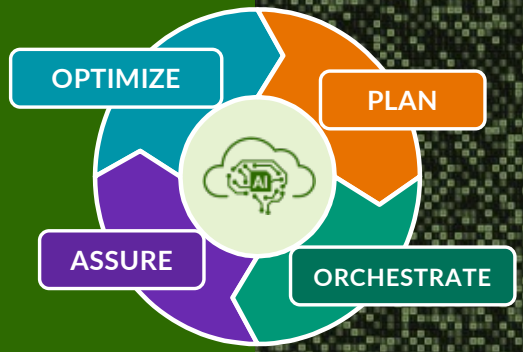
SaaS

Self-hosted

Multi-Vendor Network Infrastructure

Paragon Automation

What is your need?



PLAN	ORCHESTRATE	ASSURE	OPTIMIZE
Strategic network planning	Device onboarding	Trust and compliance	Latency based routing
Risk-failure analysis, scenario planning	Intent-based service orchestration	Network observability	Autonomous capacity optimization
	Device lifecycle management	Active assurance	Closed loop remediation

AI-Enabled Roadmap

Active assurance

ASSURE

Automate network service level validation.

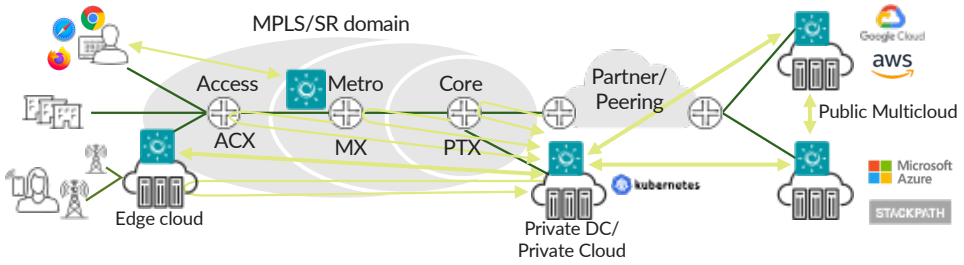
PROBLEM

- Services are not tested prior to onboarding customers, generating churn.
- Netops do not see most network problems, impacting quality and service level agreements.
- Customers finding performance degradation first.
  - Problems often not caught—especially in multivendor networks with inconsistent models.

SOLUTION

- Leverage Active Assurance to measure service quality on the data plane acting like an end-user
  - Assure that network services are right the first time.
  - Assure that network services are right all the time.

Solution Snapshot



Proven Benefits

- Gain meaningful early warnings, fast identification and location of emerging or existing issues.
- Reduces failed service delivery rates.
- Lowers OPEX.
- Accelerates time to market.

Why Paragon?

- L2-L7 active testing in one platform.
- Automated deployment with test agents.
- Light test agents.

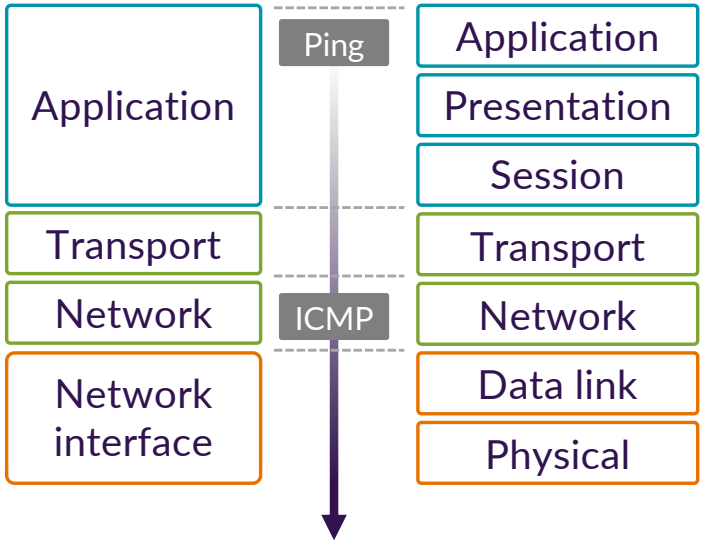
Sample customers

Consolidated communications

orange

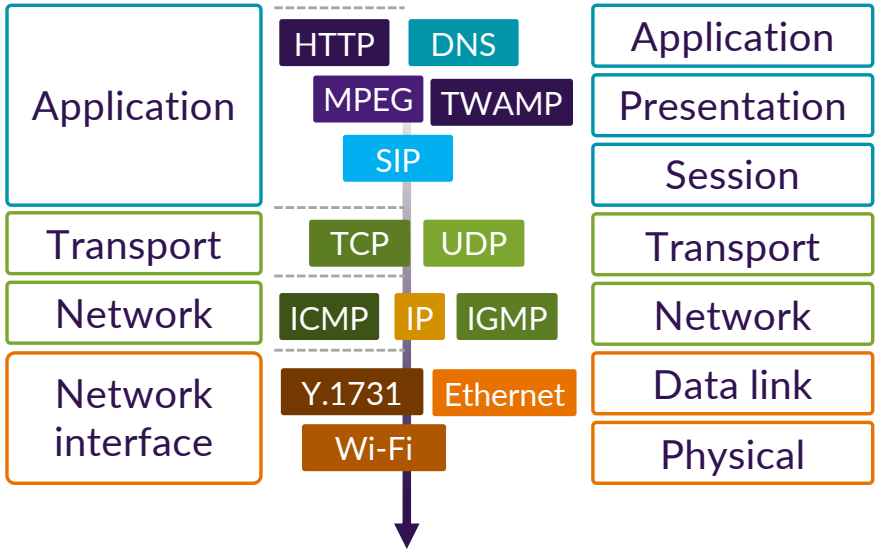
Evolving from basic ICMP to multi-layer KPIs

Basic ICMP-based Pings



Roundtrip times and packet loss

With active data plane assassurance

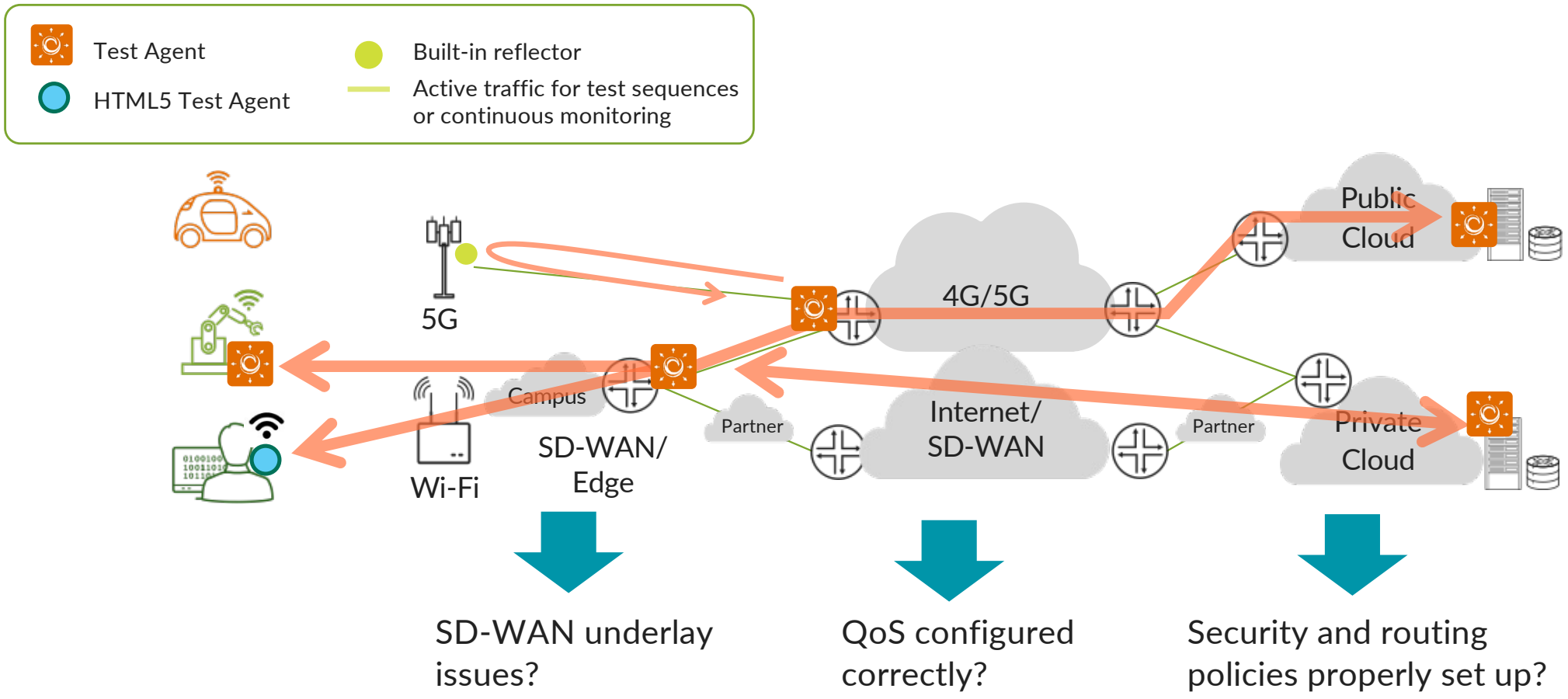


Data rate, packet loss and reordering, one-way delay, delay percentiles, jitter
TCP and Wi-Fi TX retransmissions

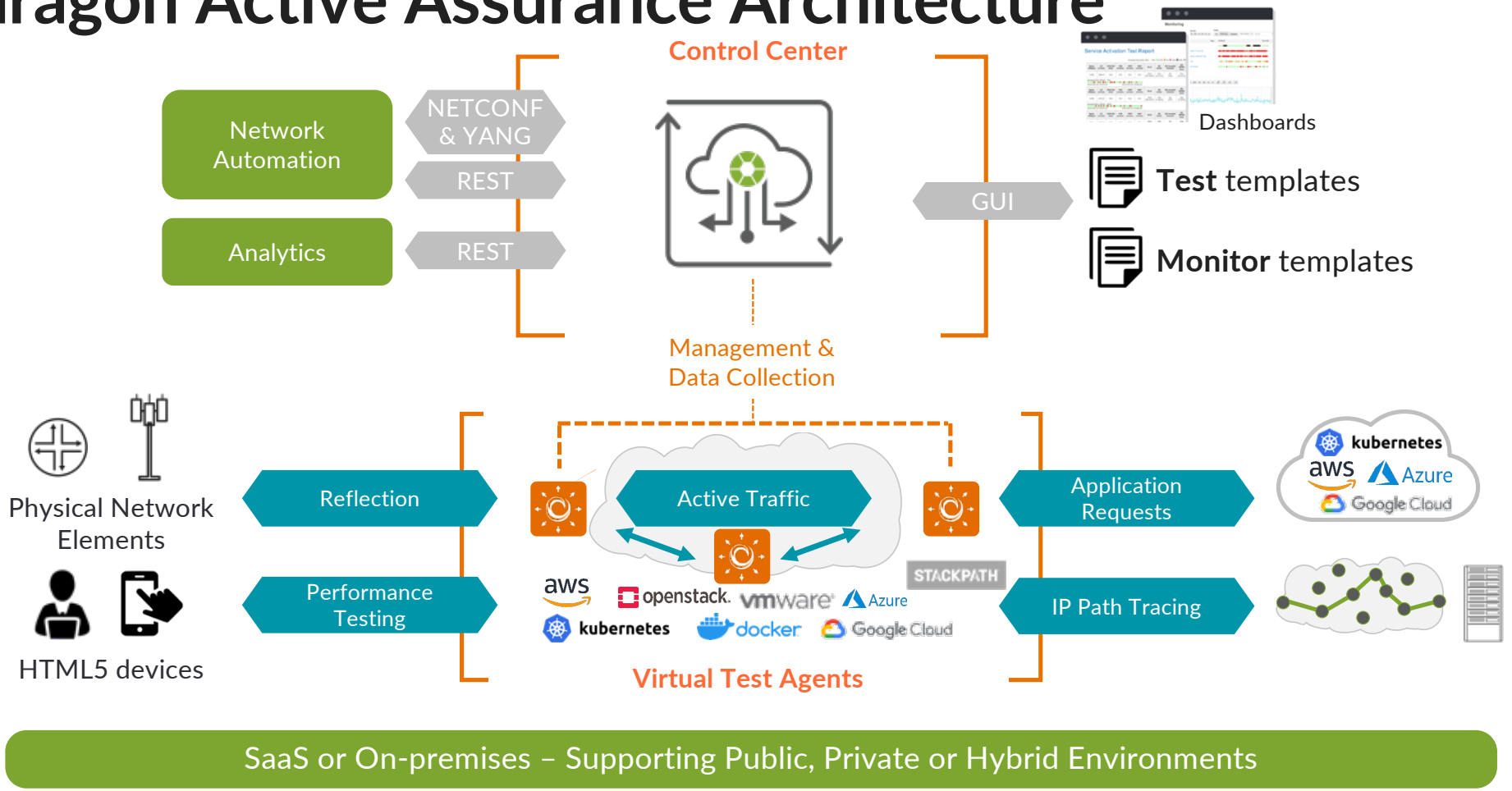
VoIP Mean Opinion Score (MOS), MPEG video quality (frame loss, PCR jitter, buffer underruns), HTTP and DNS response times

QoS scheduling verification -- DSCP and VLAN p-bits

Active Traffic on the Data Plane



Paragon Active Assurance Architecture



SaaS or On-premises – Supporting Public, Private or Hybrid Environments

L2-L7 Data Plane Metrics in One Platform

WI-FI	MOBILE	NETWORK PERFORMANCE	IPTV & OTT VIDEO	VOICE	INTERNET PERFORMANCE	REMOTE PACKET INSPECTION
SWITCHER	SWITCHER	UDP	IPTV	SIP	DNS	PACKET CAPTURE
LOGGER	LOGGER	*Y.1564/MEF 48*	*ETSI TR 101 290*	*REGISTER*	*RESPONSE TIME*	*LIVE FEED*
SCAN		*UNI/ MULTICAST*	*MULTI-CHANNEL*	*CONNECT*	*EXPECTED RESPONSE*	*PCAP FILES*
		P2P/ HUB-AND-SPOKE/ FULL-MESH	*IGMP JOIN/LEAVE*	*DISCONNECT*	*WIDE RECORD TYPE SUPPORT*	*WIRESHARK COMPATIBLE*
		STATEFUL TCP	*INLINE*	*CALL STATISTICS*	HTTP	
		RFC 6349	HTTP/OTT STREAMING	*MOS*	*TCP CONNECT*	
		MULTI-SESSION TCP	*APPLE HLS*	VOIP UDP	*TIME TO FIRST BYTE*	
		QOS POLICY PROFILING	*PLAYBACK RATE*	*G.711/G.723/G.729/ GSM-EFR*	*PAGE LOAD*	
		REFLECTOR	*DOWNLOAD RATE*	*MOS*	*DOWNLOAD RATE*	
		Y.1731 – LB/DM/SLM	*BUFFER*		HTML5 TESTS	
		802.1AG – LOOPBACK			*RATE, RESPONSE TIME*	
		RFC 5357 – TWAMP FULL/ LIGHT			*LATENCY, JITTER*	
					PING	
					ICMP, UDP	
					PATHTRACE	

Test & monitor templates used for automation and to structure measurements in flexible order and combination

Lab Exercize

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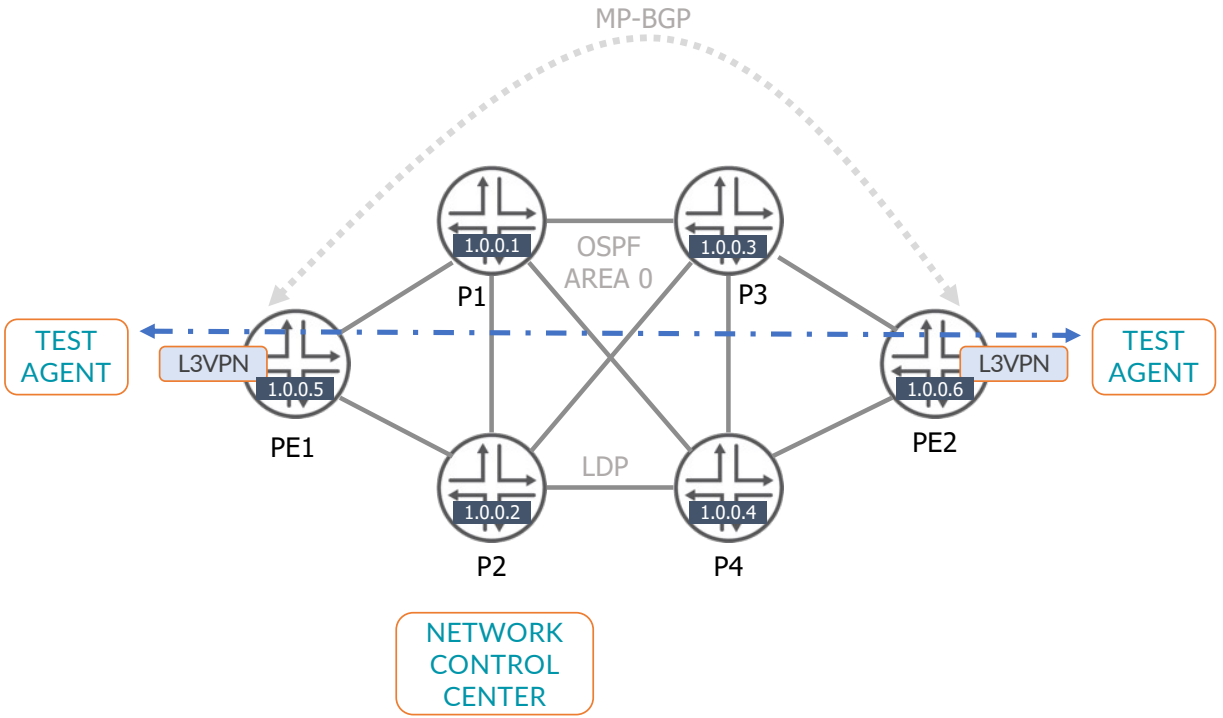
Lab Topology



Host	Protocol	IP	Pod1: x, Port	Pod2: x, Port	Pod3: x, Port	Pod4: x, Port	Pod5: x, Port	Username/Password
P1	SSH	66.129.234.x -->	.212, 35011	.202, 36011	.200, 37011	.211, 39011	.214, 46011	jcluser/Juniper!1
P2	SSH	66.129.234.x -->	.212, 35014	.202, 36014	.200, 37014	.211, 39014	.214, 46014	jcluser/Juniper!1
P3	SSH	66.129.234.x -->	.212, 35017	.202, 36017	.200, 37017	.211, 39017	.214, 46017	jcluser/Juniper!1
P4	SSH	66.129.234.x -->	.212, 35020	.202, 36020	.200, 37020	.211, 39020	.214, 46020	jcluser/Juniper!1
PE1	SSH	66.129.234.x -->	.212, 35023	.202, 36023	.200, 37023	.211, 39023	.214, 46023	jcluser/Juniper!1
PE2	SSH	66.129.234.x -->	.212, 35026	.202, 36026	.200, 37026	.211, 39026	.214, 46026	jcluser/Juniper!1
Paragon	HTTPS	66.129.234.x -->	.212, 35007	.202, 36007	.200, 37007	.211, 39007	.214, 46007	juniper@juniper.net / Juniper123

Task: Verify Node Connectivity: OSPF, LDP

```
jcluser@p3> show interfaces descriptions
Interface       Admin Link Description
ge-0/0/0        up    up   p1
ge-0/0/1        up    up   p2
ge-0/0/2        up    up   p4
ge-0/0/3        up    up   pe2

jcluser@p3> show ospf neighbor
Address          Interface              State           ID               Pri  Dead
11.0.13.1        ge-0/0/0.0             Full            1.0.0.1          128    37
11.0.23.1        ge-0/0/1.0             Full            1.0.0.2          128    37
11.0.34.2        ge-0/0/2.0             Full            1.0.0.4          128    38
11.0.36.2        ge-0/0/3.0             Full            1.0.0.6          128    34

jcluser@p3> show ldp neighbor
Address                         Interface       Label space ID     Hold time
11.0.13.1                       ge-0/0/0.0      1.0.0.1:0            13
11.0.23.1                       ge-0/0/1.0      1.0.0.2:0            12
11.0.34.2                       ge-0/0/2.0      1.0.0.4:0            13
11.0.36.2                       ge-0/0/3.0      1.0.0.6:0            11
```

Task: Verify Node Connectivity: OSPF, LDP

```
jcluser@p3> show route 1/8

inet.0: 25 destinations, 25 routes (25 active, 0 holddown, 0 hidden)
+ = Active Route, - = Last Active, * = Both

1.0.0.1/32         *[OSPF/10] 00:41:39, metric 1
                    >  to 11.0.13.1 via ge-0/0/0.0
1.0.0.2/32         *[OSPF/10] 00:41:54, metric 1
                    >  to 11.0.23.1 via ge-0/0/1.0
1.0.0.3/32         *[Direct/0] 00:42:19
                    >  via lo0.0
1.0.0.4/32         *[OSPF/10] 00:42:04, metric 1
                    >  to 11.0.34.2 via ge-0/0/2.0
1.0.0.5/32         *[OSPF/10] 00:41:34, metric 2
                    >  to 11.0.13.1 via ge-0/0/0.0
                       to 11.0.23.1 via ge-0/0/1.0
1.0.0.6/32         *[OSPF/10] 00:41:59, metric 1
                    >  to 11.0.36.2 via ge-0/0/3.0
```

Which nodes are directly connected, which are remote?

```
inet.3: 5 destinations, 5 routes (5 active, 0 holddown, 0 hidden)
+ = Active Route, - = Last Active, * = Both

1.0.0.1/32         *[LDP/9] 00:41:39, metric 1
                    >  to 11.0.13.1 via ge-0/0/0.0
1.0.0.2/32         *[LDP/9] 00:41:54, metric 1
                    >  to 11.0.23.1 via ge-0/0/1.0
1.0.0.4/32         *[LDP/9] 00:42:02, metric 1
                    >  to 11.0.34.2 via ge-0/0/2.0
1.0.0.5/32         *[LDP/9] 00:41:34, metric 1
                    >  to 11.0.13.1 via ge-0/0/0.0, Push 299808
                       to 11.0.23.1 via ge-0/0/1.0, Push 299792
1.0.0.6/32         *[LDP/9] 00:41:57, metric 1
                    >  to 11.0.36.2 via ge-0/0/3.0
```

Task: Verify Node Connectivity: BGP

```
jcluser@pe1> show bgp summary
Threading mode: BGP I/O
Default eBGP mode: advertise - accept, receive - accept
Groups: 1 Peers: 2 Down peers: 0
Table          Tot Paths  Act Paths Suppressed    History Damp State
Pending
bgp.l3vpn.0
                       2          2          0          0          0
0
Peer                     AS      InPkt     OutPkt    OutQ   Flaps Last Up/Dwn
State|#Active/Received/Accepted/Damped...
1.0.0.2               64512         29         28       0       1       11:42
Establ
  bgp.l3vpn.0: 1/1/1/0
  vrf.inet.0: 1/1/1/0
1.0.0.6               64512         29         27       0       1       11:42
Establ
  bgp.l3vpn.0: 1/1/1/0
  vrf.inet.0: 1/1/1/0
```

One prefix has two labels, the other prefix only one.

Where's the transport label?

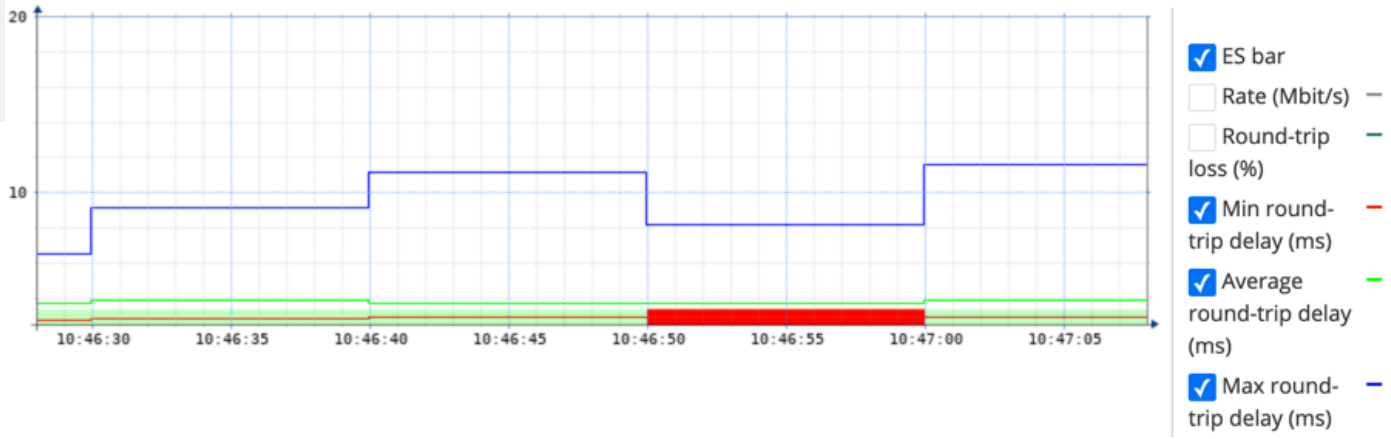
```
jcluser@vMX-addr-0> show route protocol bgp table vrf

vrf.inet.0: 4 destinations, 4 routes (4 active, 0 holddown, 0 hidden)
+ = Active Route, - = Last Active, * = Both

172.16.87.0/24     *[BGP/170] 00:12:17, localpref 100, from 1.0.0.6
                      AS path: I, validation-state: unverified
                       to 11.0.15.1 via ge-0/0/0.0, Push 16, Push 299840(top)
                     >  to 11.0.25.1 via ge-0/0/1.0, Push 16, Push 299824(top)
172.17.17.0/24     *[BGP/170] 00:12:17, localpref 100, from 1.0.0.2
                      AS path: I, validation-state: unverified
                     >  to 11.0.25.1 via ge-0/0/1.0, Push 16
```

Task: Clear BGP Session, watch PAA Monitor

```
jcluser@pe1> clear bgp neighbor all
Cleared 2 connections

jcluser@pe1> show bgp summary
Threading mode: BGP I/O
Default eBGP mode: advertise - accept, receive - accept
Groups: 1 Peers: 2 Down peers: 0
Table          Tot Paths  Act Paths Suppressed    History Damp State    Pending
bgp.l3vpn.0
                       2          2          0          0          0          0
Peer                     AS      InPkt     OutPkt    OutQ   Flaps Last Up/Dwn
State|#Active/Received/Accepted/Damped...
1.0.0.2                64512          4          3       0       2           3 Establ
  bgp.l3vpn.0: 1/1/1/0
  vrf.inet.0: 1/1/1/0
1.0.0.6                64512          4          3       0       2           3 Establ
  bgp.l3vpn.0: 1/1/1/0
  vrf.inet.0: 1/1/1/0
```

How fast did BGP re-establish?

What's the time granularity of the monitor?



Task: Configure SRGB globally

```
jcluser@p3# show groups SR-OSPF
chassis {
    network-services enhanced-ip; # required for SRGB
}
protocols {
    mpls {      # shared global SRGB
        label-range {
            srgb-label-range 100000 119999;
        }
    }
    ospf {
        source-packet-routing {
            node-segment ipv4-index 3;
        }
    }
}
```

You can use apply-groups,
or configure statements globally.

SRGB block allocation must show "success" to operate.

```
jcluser@pe1# run show ospf overview
Instance: master
  Router ID: 1.0.0.5
  Route table index: 0
  LSA refresh time: 50 minutes
  SPRING: Enabled
    SRGB Config Range (Global) :
      SRGB Start-Label : 100000, SRGB Index-Range : 20000
    SRGB Block Allocation: Failure
      SRGB Start Index : 100000, SRGB Size : 20000, Label-Range: [ 100000, 119999 ]
    Node Segments: Enabled
    Ipv4 Index : 5
  Post Convergence Backup: Disabled
  Area: 0.0.0.0
    Stub type: Not Stub
    Authentication Type: None
    Area border routers: 0, AS boundary routers: 0
    Neighbors
      Up (in full state): 2
  Topology: default (ID 0)
    Prefix export count: 0
    Full SPF runs: 12
    SPF delay: 0.200000 sec, SPF holddown: 5 sec, SPF rapid runs: 3
    Backup SPF: Not Needed
```

Task: Restart RPD, Verify Label Usage

```
jcluser@p3# run restart routing
Routing protocols process signalled but still running, waiting 28 seconds more
Routing protocols process started, pid 16747

jcluser@p3# run show mpls label usage
Label space Total   Available        Applications
LSI         979984  979975 (100.00%) BGP/LDP VPLS with no-tunnel-services, BGP L3VPN with vrf-table-label
Block       979984  979975 (100.00%) BGP/LDP VPLS with tunnel-services, BGP L2VPN
Dynamic     979984  979975 (100.00%) RSVP, LDP, PW, L3VPN, RSVP-P2MP, LDP-P2MP, MVPN, EVPN, BGP
Static      48576   48576  (100.00%) Static LSP, Static PW
Effective Ranges
Range name  Shared with Start   End
Dynamic     16      99999
Dynamic     120000  999999
Static      1000000 1048575
SRGB        100000  119999   GLOBAL
Configured Ranges
Range name  Shared with Start   End
Dynamic     16      99999
Dynamic     120000  999999
Static      1000000 1048575
SRGB        100000  119999   GLOBAL
```

```
jcluser@p3# run show route table mpls.0 match-prefix "1[0|1]*"
mpls.0: 30 destinations, 30 routes (30 active, 0 holddown, 0 hidden)
+ = Active Route, - = Last Active, * = Both

100001             *[L-OSPF/10/5] 00:42:47, metric 1
                    >  to 11.0.13.1 via ge-0/0/0.0, Pop
100001(S=0)        *[L-OSPF/10/5] 00:42:47, metric 1
                    >  to 11.0.13.1 via ge-0/0/0.0, Pop
100002             *[L-OSPF/10/5] 00:42:47, metric 1
                    >  to 11.0.23.1 via ge-0/0/1.0, Pop
100002(S=0)        *[L-OSPF/10/5] 00:42:47, metric 1
                    >  to 11.0.23.1 via ge-0/0/1.0, Pop
100004             *[L-OSPF/10/5] 00:42:47, metric 1
                    >  to 11.0.34.2 via ge-0/0/2.0, Pop
100004(S=0)        *[L-OSPF/10/5] 00:42:47, metric 1
                    >  to 11.0.34.2 via ge-0/0/2.0, Pop
100005             *[L-OSPF/10/5] 00:42:47, metric 2
                    >  to 11.0.13.1 via ge-0/0/0.0, Swap 100005
                       to 11.0.23.1 via ge-0/0/1.0, Swap 100005
```

Task: Understand Route Preference

```
jcluser@pe1# run show route 1.0.0.6

inet.0: 23 destinations, 23 routes (23 active, 0 holddown, 0 hidden)
+ = Active Route, - = Last Active, * = Both

1.0.0.6/32         *[OSPF/10/10] 00:00:46, metric 3
                    >  to 11.0.15.1 via ge-0/0/0.0
                       to 11.0.25.1 via ge-0/0/1.0

inet.3: 5 destinations, 10 routes (5 active, 0 holddown, 0 hidden)
+ = Active Route, - = Last Active, * = Both

1.0.0.6/32         *[LDP/9] 00:00:41, metric 1
                    >  to 11.0.15.1 via ge-0/0/0.0, Push 30
                       to 11.0.25.1 via ge-0/0/1.0, Push 37
                    [L-OSPF/10/5] 00:00:46, metric 3
                    >  to 11.0.15.1 via ge-0/0/0.0, Push 100006
                       to 11.0.25.1 via ge-0/0/1.0, Push 100006
```

Which are the next-hops for plain IPv4 traffic towards pe2?

... and what is the MPLS path – LDP or L-OSPF or both?

... why is LDP showing metric 1 and L-OSPF shows metric 3?

Task: Change Route Preference on PE1

```
jcluser@pe1# show groups SR-OSPF-PREFERRED
protocols {
    ldp {
        preference 11;
    }
}
jcluser@pe1# run show route 1.0.0.6 table inet.3

inet.3: 5 destinations, 5 routes (5 active, 0 holddown, 0 hidden)
+ = Active Route, - = Last Active, * = Both

1.0.0.6/32         *[LDP/11] 00:00:09, metric 1
                    >  to 11.0.15.1 via ge-0/0/0.0, Push 47
                       to 11.0.25.1 via ge-0/0/1.0, Push 38
```

Which is the best path now?

Is BGP still up and running?

Was there any outage registered on Paragon Active Assurance?

Task: Enable SR-MPLS on P1

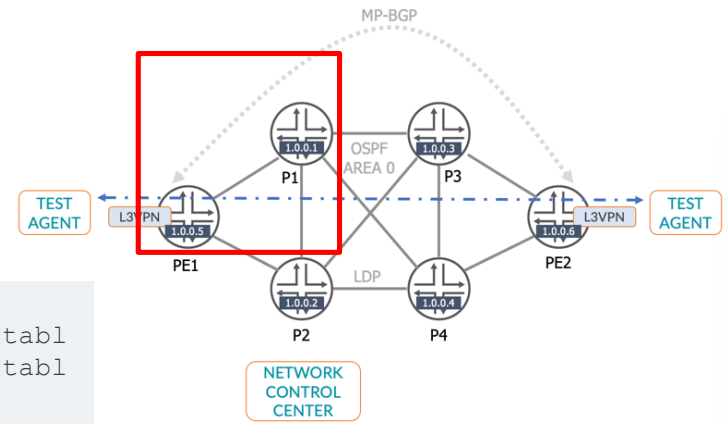
```
jcluser@p1# show groups SR-OSPF
chassis {
    network-services enhanced-ip;
}
protocols {
    mpls {
        label-range {
            srgb-label-range 100000 119999;
        }
    }
    ospf {
        source-packet-routing {
            node-segment ipv4-index 1;
        }
    }
}
```

Which is the best path now?

Is BGP still up and running?

Was there any outage registered on Paragon Active Assurance?

Task: Enable SR-MPLS on P1



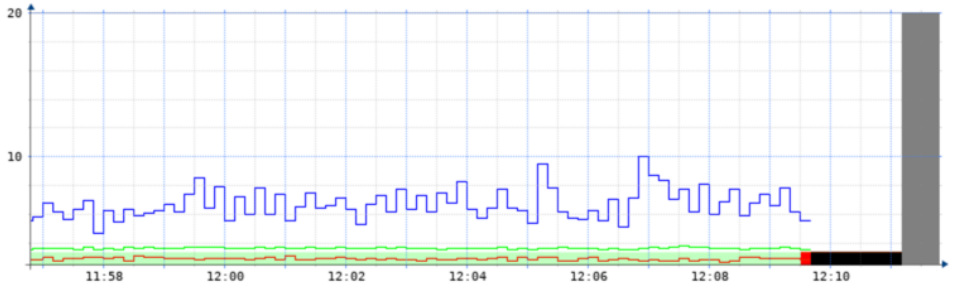
Go back to PE1, check the state:

```
jcluser@pe1# run show bgp summary | match esta
1.0.0.2                64512      12011      12010       0       0 3d 18:23:25 Establ
1.0.0.6                64512      12011      12009       0       0 3d 18:23:19 Establ

jcluser@pe1# run show route 1.0.0.6 table inet.3

inet.3: 5 destinations, 7 routes (5 active, 0 holddown, 0 hidden)
+ = Active Route, - = Last Active, * = Both

1.0.0.6/32          *[L-OSPF/10/5] 00:00:35, metric 12
                     >  to 11.0.15.1 via ge-0/0/0.0, Push 100006
                     [LDP/11] 00:06:11, metric 1
                     >  to 11.0.15.1 via ge-0/0/0.0, Push 47
                        to 11.0.25.1 via ge-0/0/1.0, Push 38
```

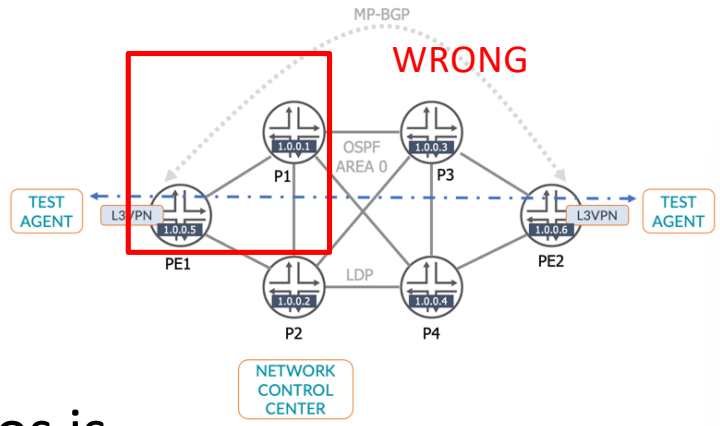
BGP is up and running.

Traffic is blackholed.

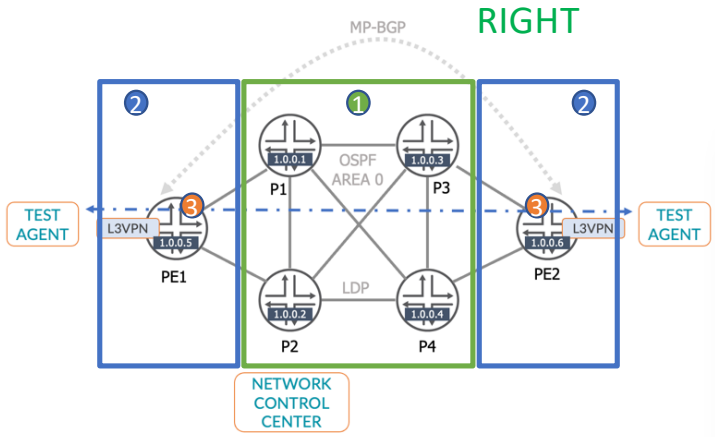
Why?



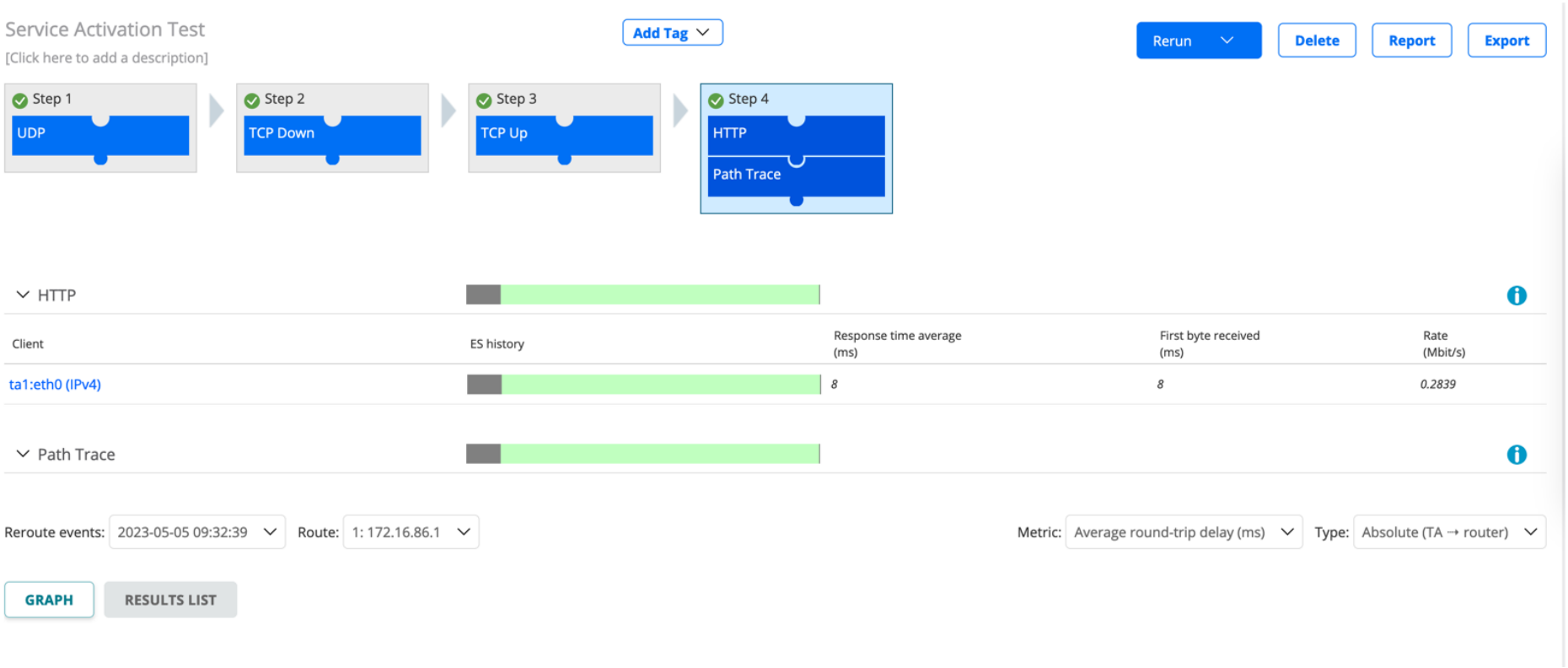
Lesson learned



- Don't do this way in real network
- PE1 alone with SR does not do any harm, as Junos is smart enough to check if next-hop is SR-enabled
- PE1 cannot (should not) verify if every hop in the network is SR-enabled
  - because e.g. SR can be tunneled via RSVP, or via SR-TE
- When adding SR to the network:
  1. start with core devices
  2. add PE devices
  3. change the priority on PEs one by one
     - can result in assymetric routing (LDP vs. SR)



Task: Service Activation Test in Paragon

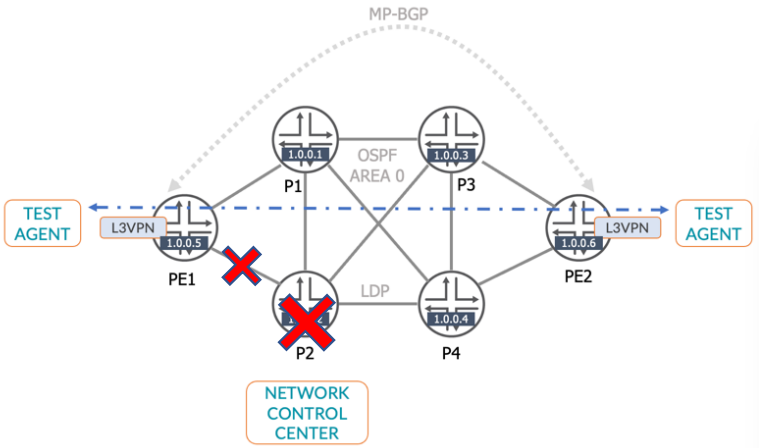


Task: Enable TI-LFA

Why is it called "post-convergence"?

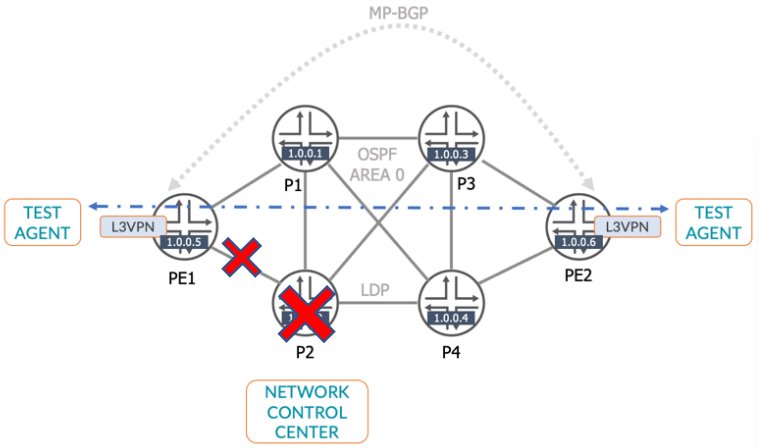
What are max-labels and max backup paths?

```
jcluser@pe1# show groups TI-LFA
interfaces {
    ge-0/0/0 { unit 0 {
            family mpls {
                maximum-labels 16; }}}                  # increase max labels
    ge-0/0/1 { unit 0 {
            family mpls {
                maximum-labels 16; }}}}                 # increase max labels
policy-options {
    policy-statement LB {
        then {
            load-balance per-flow; }}}                  # enable load-balance
routing-options {
    forwarding-table {
        export LB; }}                                   # load-balancing
protocols {
    ospf {
        backup-spf-options {
            use-post-convergence-lfa {                  # enable TI-LFA
                maximum-labels 3;                       # label stack depth
                maximum-backup-paths 2;}                # ECMP for TI-LFA paths
            use-source-packet-routing; }                # enable TI-LFA for "plain" traffic
        area 0.0.0.0 {
            interface ge-0/0/0.0 {                      # include every interface
                post-convergence-lfa {                  # enable link-protection TI-LFA
                    node-protection cost 1000;          # enable node- and link-protection
                    srlg-protection;                    # include SRLG in TI-LFA calculation
                }}}}}
```



Task: Check TI-LFA

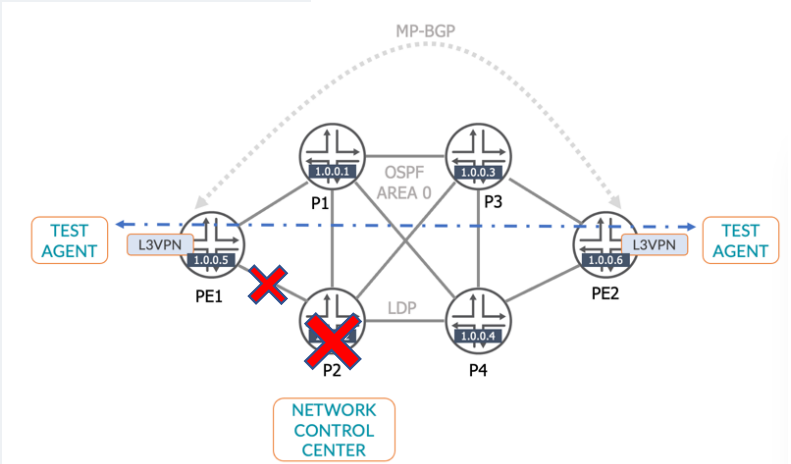
```
jcluser@pe1# run show ospf overview
Instance: master
  Router ID: 1.0.0.5
  Route table index: 0
  LSA refresh time: 50 minutes
  SPRING: Enabled
    SRGB Config Range (Global) :
      SRGB Start-Label : 100000, SRGB Index-Range : 20000
    SRGB Block Allocation: Success
      SRGB Start Index : 100000, SRGB Size : 20000, Label-Range: [ 100000, 119999 ]
    Node Segments: Enabled
    Ipv4 Index : 5
  Post Convergence Backup: Enabled
    Max labels: 3, Max spf: 100, Max Ecmp Backup: 2
  Area: 0.0.0.0
    Stub type: Not Stub
    Authentication Type: None
    Area border routers: 0, AS boundary routers: 0
    Neighbors
      Up (in full state): 2
  Topology: default (ID 0)
    Prefix export count: 0
    Full SPF runs: 27
    SPF delay: 0.200000 sec, SPF holddown: 5 sec, SPF rapid runs: 3
    Backup SPF: Not Needed
```



Note: "max SPF runs" protects routing daemon from too many SPF runs

Task: Check TI-LFA

```
jcluser@pe1# run show route 1.0.0.6 detail protocol ospf | match "inet|entr|wei|next hop"

inet.0: 23 destinations, 24 routes (23 active, 0 holddown, 0 hidden)
1.0.0.6/32 (1 entry, 1 announced)
                Next hop type: Router, Next hop index: 0
                Next hop: 11.0.15.1 via ge-0/0/0.0 weight 0x1, selected
                Next hop: 11.0.25.1 via ge-0/0/1.0 weight 0xf000

inet.3: 5 destinations, 10 routes (5 active, 0 holddown, 0 hidden)
1.0.0.6/32 (2 entries, 1 announced)
                Next hop type: Router, Next hop index: 0
                Next hop: 11.0.15.1 via ge-0/0/0.0 weight 0x1, selected
                Next hop: 11.0.25.1 via ge-0/0/1.0 weight 0xf000

jcluser@pe1# run show ospf interface ge-0/0/0.0 detail
Interface           State   Area            DR ID           BDR ID
ge-0/0/0.0          PtToPt  0.0.0.0         0.0.0.0         0.0.0.0            1
  Type: P2P, Address: 11.0.15.2, Mask: 255.255.255.252, MTU: 1500, Cost: 10
  Adj count: 1
  Hello: 10, Dead: 40, ReXmit: 5, Not Stub
  Auth type: None
  Protection type: Post Convergence
  Post convergence protection: Enabled, Fate sharing: No, SRLG: Yes, Node cost: 1000
  Topology default (ID 0) -> Cost: 10
```




THANK YOU
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